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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,306

06/23/2006

Takashi Ikemoto

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EXAMINER

CULLEN, SEAN P

ART UNIT

PAPER NUMBER

1795

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,306	<b>Applicant(s)</b> IKEMOTO ET AL.	
	<b>Examiner</b> Sean P. Cullen	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 July 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (JP 20020088188, see machine translation).

Regarding claim 1, Kondo et al. discloses a polyolefin microporous membrane (see polyethylene fine porous film, [0001] having:

- a membrane thickness of 1 to 30  $\mu\text{m}$  (see 10-30 micrometers, [0013]),
- a void content of 30 to 60% (see 40%-60%, [0013]),
- a gas transmission rate of 50 to 250 sec/100 cc (see Table 1, 50- 80 sec/100 cc, [0028]),
- a piercing strength of 2.35 to 11.8 N/20  $\mu\text{m}$  (see 300-1500 g/25  $\mu\text{m}$ , [0014]; 2.35-11.8 N/20  $\mu\text{m}$ ),
- a maximum pore size (see maximum aperture, [0019]) determined by the bubble point method (see ASTM F-316-86, [0019]) of 0.14 to 0.66  $\mu\text{m}$  (see aperture distribution index are ... 1.40-2.2, [0009]; see average aperture is 0.1-0.3 micrometers, [0011]), and
- a ratio of the maximum pore size to the average pore size (see aperture distribution index, [0019]) (the maximum pore size/the average pore size) of 1.40 to 2.2 (see aperture distribution index, [0009]).

Kondo et al. does not explicitly disclose:

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- a piercing strength of 3.5 to 20.0 N/20  $\mu\text{m}$ ,
- a maximum pore size of 0.08 to 0.20  $\mu\text{m}$ ,
- a ratio of the maximum pore size to the average pore size of 1.00 to 1.40.

Although Kondo et al. does not explicitly disclose a piercing strength of 3.5 to 20.0 N/20  $\mu\text{m}$ , Kondo et al. does disclose an overlapping range of 2.35 to 11.8 N/20  $\mu\text{m}$ . Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

Although Kondo et al. does not explicitly disclose a maximum pore size of 0.08 to 0.20  $\mu\text{m}$ , Kondo et al. does disclose an overlapping range of 0.14 to 0.66  $\mu\text{m}$ . Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

Although Kondo et al. does not explicitly disclose a ratio of the maximum pore size to the average pore size of 1.00 to 1.40, Kondo et al. does disclose an overlapping range of 1.40 to 2.2. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

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Regarding claim 2, modified Kondo et al. discloses all claim limitations set forth above and further discloses a polyolefin microporous membrane:

- which is for use in electronic components (see battery, [0026]).

Regarding claim 3, modified Kondo et al. discloses a polyolefin separator for nonaqueous electrolyte batteries ([0019] and [0026]):

- comprising the polyolefin microporous membrane according to claim 1 (see Comparative example 1, [0026]).

Regarding claim 4, modified Kondo et al. discloses a nonaqueous battery (see battery, [0019] and [0026]):

- characterized in that the polyolefin microporous membrane according to claim 3 is used as a separator [0026].

3. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Call (U.S. 2005/0031943 A1) in view of Matsuda et al. (EP 1,063,256 A1).

Regarding claim 1, Call discloses a polyolefin microporous membrane (see battery separator, [0011]) having:

- a membrane thickness of 1 to 30  $\mu\text{m}$  (see EX 3, [0018]; 20.7  $\mu\text{m}$ )
- a void content of 30 to 60% (see EX 3, [0018]; 42.2 %),
- a gas transmission rate of 50 to 250 sec/100 cc (see EX 3, [0018]; 18.8 sec/10 cc = 188 sec/100 cc, [0011]),
- a piercing strength of 3.5 to 20.0 N/20  $\mu\text{m}$  (see EX 3, [0018]; 423 g/20.7  $\mu\text{m}$  = 4.01 N/ 20  $\mu\text{m}$ , [0011]),

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- an average pore size of 0.04 to 0.09  $\mu\text{m}$  (see pore size, [0011])

Call does not explicitly disclose:

- a maximum pore size determined by the bubble point method of 0.08 to 0.20  $\mu\text{m}$ ,  
and
- a ratio of the maximum pore size to the average pore size (the maximum pore size/the average pore size) of 1.00 to 1.40.

Matsuda et al. discloses a microporous membrane wherein a ratio of the maximum pore size to the average pore size of 1.00 to 1.50 (see 1.5 or less, [0032]) to provide a membrane with excellent permeability and mechanical properties. Although Matsuda et al. does not explicitly disclose a ratio of the maximum pore size to the average pore size of 1.00 to 1.40, Matsuda et al. does disclose an overlapping range of 1.00 to 1.50. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

Modified Call et al. discloses an average pore size of 0.04 to 0.09  $\mu\text{m}$  and a ratio of maximum pore size to average pore size of 1.00 to 1.50. Therefore, modified Call et al discloses a maximum pore size of 0.04 to 0.14  $\mu\text{m}$ . Although modified Call et al. does not explicitly disclose a maximum pore size of 0.08 to 0.20  $\mu\text{m}$ , modified Call et al. does disclose an overlapping range of 0.04 to 0.14  $\mu\text{m}$ . Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

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Regarding claim 2, modified Call discloses all claim limitations set forth above and further discloses a polyolefin microporous membrane:

- which is for use in electronic components (see battery separator, title).

Regarding claim 3, a polyolefin separator for nonaqueous electrolyte batteries (see separator, [0011]) comprising:

- a polyolefin microporous membrane (see battery separator, [0011]) having:
  - a membrane thickness of 1 to 30  $\mu\text{m}$  (see EX 3, [0018]; 20.7  $\mu\text{m}$ )
  - a void content of 30 to 60% (see EX 3, [0018]; 42.2 %),
  - a gas transmission rate of 50 to 250 sec/100 cc (see EX 3, [0018]; 18.8 sec/10 cc = 188 sec/100 cc, [0011]),
  - a piercing strength of 3.5 to 20.0 N/20  $\mu\text{m}$  (see EX 3, [0018]; 423 g/20.7  $\mu\text{m}$  = 4.01 N/ 20  $\mu\text{m}$ , [0011]),
  - an average pore size of 0.04 to 0.09  $\mu\text{m}$  (see pore size, [0011])

Call does not explicitly disclose:

- a maximum pore size determined by the bubble point method of 0.08 to 0.20  $\mu\text{m}$ , and
- a ratio of the maximum pore size to the average pore size (the maximum pore size/the average pore size) of 1.00 to 1.40.

Matsuda et al. discloses a microporous membrane wherein a ratio of the maximum pore size to the average pore size of 1.00 to 1.50 (see 1.5 or less, [0032]) to provide a membrane with excellent permeability and mechanical properties. Although Matsuda et al. does not explicitly disclose a ratio of the maximum pore size to the average pore size of 1.00 to 1.40, Matsuda et al.

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does disclose an overlapping range of 1.00 to 1.50. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

Modified Call et al. discloses an average pore size of 0.04 to 0.09  $\mu\text{m}$  and a ratio of maximum pore size to average pore size of 1.00 to 1.50. Therefore, modified Call et al discloses a maximum pore size of 0.04 to 0.14  $\mu\text{m}$ . Although modified Call et al. does not explicitly disclose a maximum pore size of 0.08 to 0.20  $\mu\text{m}$ , modified Call et al. does disclose an overlapping range of 0.04 to 0.14  $\mu\text{m}$ . Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

Regarding claim 4, Call discloses a nonaqueous electrolyte battery (see batteries based on lithium chemistry, [0011]) comprising:

- a battery separator [0011] comprising
  - a polyolefin microporous membrane (see battery separator, [0011])  
having:
    - a membrane thickness of 1 to 30  $\mu\text{m}$  (see EX 3, [0018]; 20.7  $\mu\text{m}$ )
    - a void content of 30 to 60% (see EX 3, [0018]; 42.2 %),
    - a gas transmission rate of 50 to 250 sec/100 cc (see EX 3, [0018];  
18.8 sec/10 cc = 188 sec/100 cc, [0011]),



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- a piercing strength of 3.5 to 20.0 N/20  $\mu\text{m}$  (see EX 3, [0018]; 423 g/20.7  $\mu\text{m}$  = 4.01 N/ 20  $\mu\text{m}$ , [0011]),
- an average pore size of 0.04 to 0.09  $\mu\text{m}$  (see pore size, [0011])

Call does not explicitly disclose:

- a maximum pore size determined by the bubble point method of 0.08 to 0.20  $\mu\text{m}$ ,  
and
- a ratio of the maximum pore size to the average pore size (the maximum pore size/the average pore size) of 1.00 to 1.40.

Matsuda et al. discloses a microporous membrane wherein a ratio of the maximum pore size to the average pore size of 1.00 to 1.50 (see 1.5 or less, [0032]) to provide a membrane with excellent permeability and mechanical properties. Although Matsuda et al. does not explicitly disclose a ratio of the maximum pore size to the average pore size of 1.00 to 1.40, Matsuda et al. does disclose an overlapping range of 1.00 to 1.50. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

Modified Call et al. discloses an average pore size of 0.04 to 0.09  $\mu\text{m}$  and a ratio of maximum pore size to average pore size of 1.00 to 1.50. Therefore, modified Call et al discloses a maximum pore size of 0.04 to 0.14  $\mu\text{m}$ . Although modified Call et al. does not explicitly disclose a maximum pore size of 0.08 to 0.20  $\mu\text{m}$ , modified Call et al. does disclose an overlapping range of 0.04 to 0.14  $\mu\text{m}$ . Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges

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disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 1-4 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Cullen whose telephone number is 571-270-1251. The examiner can normally be reached on Monday thru Thursday 6:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on 571-272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/S. P. C./

Examiner, Art Unit 1795

/Robert Hodge/

Primary Examiner, Art Unit 1795